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Derivation of specific antibody-producing tissue culture and tumor lines by cell fusion.

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Cell fusion techniques have been used to produce hybrids between myeloma cells and antibody-producing cells. The hybrid lines derived are permanently adapted to grow in tissue culture and are capable of inducing antibody-producing tumors in mice. Spleens from mice immunized against sheep red blood cells (SRBC) were fused to an 8-azaguanine-resistant clone (X63-Ag8) of MOPC 21 myeloma. Over 50% of the derived hybrid lines produce and secrete immunoglobulins different from the MOPC 21 myeloma. About 10% of the hybrid lines exhibit anti-SRBC activity. The high proportion of antibody-producing hybrids suggests that the fusion involves a restricted fraction of the spleen cell population, probably cells committed to antibody production. In order to avoid the presence of the MOPC 21 heavy chain in the specific hybrids, another myeloma cell line (NSI/1-Ag4-1) has been used. This is a nonsecreting variant of the MOPC 21 myeloma which does not express heavy chains. Three anti-SRBC (probably of the mu, gamma2b and gamma1 classes, respectively) and two anti-2,4,6-trinitrophenyl (of the mu class) antibody-producing hybrids have been repeatedly cloned. By random selection and by selection of specific clones according to their lytic activity (clone plaque selection), a number of different lines have been constructed. Such lines express different combinations of the four possible chains of each hybrid line: the myeloma gamma and K chains and the specific antibody heavy and light chains. In three cases (Sp1, Sp2 and Sp7) it is shown that only the specific H and L combination has activity and that the myeloma chains are unable to substitute for them. In most cases lines have been derived which no longer express the MOPC 21 chains but only the specific antibody chains.

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